

TI Boosts Its Effort In Low-Cost PC Fray

LAS VEGAS — Texas Instruments last week introduced two new low-cost personal computers, thus emerging from the Consumer Electronics Show here as a formidable challenger to Atari, Commodore and Timex Sinclair.

TI, in what many CES attendees called the best-kept secret of the season, unveiled a portable, less-than-\$250 computer and the first less-than-\$100 16-bit computer. Both products complement the company's first foray in that market, the popular 99/4.

TI's Compact Computer 40 (model CC-40) uses an as-yet-undisclosed CMOS 8-bit processor that can operate for more than 200 hours on a single set of four AA cells. A staggered

QWERTY keyboard and LCD display are contained in a 9.5 × 5.75 × 1-in. package.

The machine, scheduled to be available later this year, contains 34 kbytes of CMOS ROM, including a version of TI's enhanced Basic, compatible with the firm's 99/4 machine Basic. Firmware for an always-accessible calculator mode is also contained in the ROM. TI said 6 kbytes of user CMOS RAM is standard, optionally expandable to 16k.

An application-cartridge port on the top right of the machine can accept user program ROMs of up to 128k in size. A TI spokesman did not rule out the possibility of this ROM pack having the capability of addi-

(Continued on Page 56)

Monday, January 17, 1983

COMPUTER ENGINEERING

Texas Instruments Introduces Two Low-Cost Personal Computers

(Continued from Page 53)
ditional internal RAM, above the CC-40's internal 16k limit. The machine can also accept application programs from an external tape drive.

The 22-ounce machine features a 31-

character, 5 × 8-dot matrix LCD display that can scroll uppercase and lowercase text and messages, with limited descenders. Eighteen message annunciators in the LCD display area inform the user of system status.

Flags indicate I/O operation, errors, low-battery condition, degrees/radians/rads, shifted letter and shift lock modes. There are six user-definable flags and left and right scrolling indicators for the dot-matrix display, which can scan through an 80-character virtual line.

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The CC-40 can access a group of peripherals, including an RS-232 port, a four-color printer-plotter and a Wafertape digital drive. All the peripherals share a common 4.63 x 5.75-in. footprint, and are stackable. All are between 1 in. and 2 in. tall.

The RS-232 interface, HX-3000, will retail for less than \$100. An optional cable will allow the interface to directly drive an 80-column parallel printer.

The HX-1000 color printer can output text in 10 sizes at rates of up to 11 cps, on 2.25-in.-wide plain paper (adding-machine rolls). When printing the smallest-sized set of characters, 36 may be printed on a line. Priced at less than \$200, the unit can X-Y plot in four colors, powered by rechargeable AA cells.

The Wafertape drive, model HX-2000, uses thin continuous-loop tape cartridges, which contain up to 48 kbytes of program material and data on a 50-ft. loop. The \$140 AA-cell-powered transport is completely controlled by the CC-40, and transfers data at 8 kbits per second. An integral file-management system allows the user to access files by name. An 8-kbyte program can load in 20 seconds.

Plug-In ROM Applications

Eight plug-in ROM applications programs will be available initially, priced from \$39.95 to \$124.95, with an editor/ assembler commanding the top perch. Program titles include engineering, finance, statistics and games. By the third quarter, TI expects to quintuple that number of ROM-based programs.

By the second and third quarters, these units will be joined by a monochrome video monitor, modems, an optical wand and a series of full-size printers. Besides addressing these peripheral devices, the CC-40 contains a TI Hex-bus port to allow communication with the firm's existing 99/4 and new model 99/2 computers. The Hex-bus will also communicate with future TI computer products, not disclosed at press time.

The CC-40 is seen by observers as the redesigned version of the TI-88 Portable Computing System announced seven months ago but never delivered.

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Industry Reaction

Retailer reaction at CES to the model 99/2 was immediate. "It will blow my Timex computers right out of the showcase," said one retailer.

The new TI computer, unlike Timex's model TS-1000, can use programs in ROM cartridges, as well as tape-loaded software. And the \$99.95 retail unit features a full QWERTY keyboard, unlike the planar design of the Timex.

The TI-99/2 console features an elastic typewriter keyboard with a staggered layout, similar to the TI-99/4 family console, totaling 48 keys. Standard features include 24 kbytes of ROM and 4.2 kbytes of user-accessible RAM. Up to 32k of RAM can be added for a total of 36.2k.

The host processor is the TI-9995 16-bit NMOS micro. TI Basic is standard in the 24k of ROM. When compared head-to-head with the Timex unit, the 99/2 has double the standard RAM and maximum RAM capacity. It also has three times the 8k ROM resident in the Timex TS-1000.

A built-in RF modulator is standard, displaying 28 characters on 24 lines in a monochrome display, unlike the color capability of the more expensive model 99/4. Connecting cables are included for operation with an owner's television and with a conventional cassette recorder.

The 99/2 will be able to use the entire family of Hex-bus peripherals of the companion CC-40 and is capable of producing color graph plots on the HX-1000 color printer/plotter.

Initially, when the machine is delivered in the second quarter, two ROM cartridges will be available: "Learn To Program" and "Learn To Program Basic," priced at \$19.95 each. At that time, 20 software tape cassettes will be offered, priced between \$9.95 and \$19.95 each. Initial titles feature a variety of educational, personal finance and management, as well as entertainment programs.

—Richard Doherty

Texas Instruments Consumer Group,
Lubbock, TX 79408. (800) 858-4565.

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